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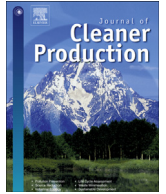
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The impact of values and future orientation on intention formation within sustainable entrepreneurship

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ABSTRACT

Intentions have been identified as one of the main drivers of sustainable entrepreneurial opportunity recognition and ultimately activity. However, research has not provided sufficient explanation for how the inherent complexities of simultaneously generating social, environmental and economic value as well as considering the needs of future generations might influence the intention formation process of sustainable entrepreneurs. The aim of this study is therefore to investigate the impacts of values and future orientation on said intention formation process. This study uses structural equation modeling to quantitatively analyze an adapted model of the theory of planned behavior based on survey data of 407 students collected within two European countries. The empirical results highlight the importance of self-transcending values and future orientation to understand attitudes towards sustainable entrepreneurship. Attitudes and perceived behavioral control, in turn, positively influence intentions to become a sustainable entrepreneur. On a practical note, the results suggest that educational and other practitioners could stimulate sustainable entrepreneurial intentions through value activation strategies to raise attitudes. It is further recommended that, as a matter of policy, governmental programs should help strengthen subjective norms as a different route to stimulating intention formation.

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1. Introduction

Sustainable entrepreneurs aim to balance the triple bottom line of social, environmental and economic goals (Cohen and Winn, 2007; Dean and McMullen, 2007; Shepherd and Patzelt, 2011). More specifically, Shepherd and Patzelt (2011, p.142) define sustainable entrepreneurship as being ‘*focused on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society.*’ Therefore, sustainable entrepreneurship is increasingly cited as the link between business and sustainable development to reach the sustainable development goals of the United Nations (Hall et al., 2010). In that regard, sustainable entrepreneurs are also key players and drivers of innovation in the transition towards a more circular economy through collaborations with larger companies (Veleva and Bodkin, 2018), the integration of external dynamic

capabilities (Eikelenboom and de Jong, 2019) or green human resource management (Singh et al., 2020). Despite this important role, the global entrepreneurship monitor reports relatively low average percentages of the adult population being active in starting (3.6%) and established (3.7%) enterprises with goals beyond economic profitability. These percentages are also relatively stable in comparison to the last report in 2009 (Global Entrepreneurship Monitor, 2016). One explanation for the current low engagement might be the inherent complexity of successfully founding a sustainable enterprise (Muñoz, 2018). Balancing the triple bottom line means that would-be sustainable entrepreneurs potentially face tensions between their personal, economic benefits and environmental and/or social value creation, which are usually felt more on a larger, social scale (i.e., intra-generational tensions). At the same time, in light of sustainable development, sustainable entrepreneurs must consider the needs of future generations, which might be in conflict with entrepreneurial decisions today (i.e., inter-generational tensions) (Arnocky et al., 2014).

These complexities might influence the intention of individuals to start a sustainable enterprise, with intentions typically seen as the most important and unbiased predictor of entrepreneurial behavior (Krueger et al., 2000; Vuorio et al., 2018). Unfortunately,

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our understanding of the role of these complexities on individuals' intention to become sustainable entrepreneurs to date remains limited. We agree with the conclusion of previous research that a first step in this direction is to adapt the existing intention models with sustainable entrepreneurial specific measures such as values and sustainability orientation (Vuorio et al., 2018). This is especially important considering that sustainable entrepreneurship is a "value laden" concept and sustainable entrepreneurs draw upon certain values as guiding principles that can be considered to be different from those of conventional entrepreneurship (Muñoz, 2018; Shepherd and Patzelt, 2011). However, previous research has focused exclusively on work values and general altruism to describe intention formation in sustainable entrepreneurship (Vuorio et al., 2018). We therefore propose to use both self-transcending (i.e., altruistic and biospheric) and self-enhancing (i.e., egoistic and hedonic) values. Both types of values help to further discriminate between altruism towards other individuals (i.e., social altruism) or towards the environment (i.e., biospheric altruism) (Steg et al., 2014). At the same time, scholars argue that individuals contributing to sustainable development must show some consideration of the future consequences of their behavior to consider inter-generational equity (Arnocky et al., 2014). To date, the role played of the consideration of future consequences has been largely neglected by sustainable entrepreneurship research (Strathman et al., 1994; Vuorio et al., 2018). The aim of this paper is therefore to incorporate these insights within the theory of planned behavior (TPB) to explain intention formation in sustainable entrepreneurship (Ajzen, 1991). More specifically, we do so through the integration of both self-enhancing and self-transcending values to discriminate between types of altruism as well as considering the extent to which individuals consider the future consequences of their behavior within the TPB. We therefore also follow the calls for integrating the more behavioral aspects of decision making in terms of sustainability practices in a business context (Maria da Silva et al., 2020). In this way, our model also helps to offer a more fine-grained conceptualization of the complexities related to and influences on intention formation in sustainable entrepreneurship.

The remainder of this article is structured as follows. Section 2 reviews the entrepreneurial intention literature in relation to the sustainability and environmental psychology literature. Based on this review, we hypothesize how values and consideration of future consequences might influence the different stages of intention formation in sustainable entrepreneurship. Subsequently, sections 3 and 4 describe our methodology, study design and results. In section 5, we discuss our results in light of the sustainable entrepreneurship literature and give implications for governmental and educational practitioners. The paper concludes with limitations and avenues for future research.

2. Literature and hypotheses

2.1. The process of intention formation

Entrepreneurship is typically understood as intentionally planned behavior. Entrepreneurs do not merely react to external stimuli or catalyzing events but rather follow intentionally planned processes when starting enterprises (Krueger et al., 2000). The theory of planned behavior (TPB) is one of the most frequently used and consistently validated theories to model entrepreneurial intention formation (Krueger et al., 2000; Liñan and Chen, 2009; Moriano et al., 2012). Consequently, some studies have also used the TPB to explain non-conventional entrepreneurial intention formation such as social (Forster and Grichnik, 2013) and sustainable entrepreneurship (Vuorio et al., 2018). One explanation for this

widespread usage of the TPB might be its ability to validly model entrepreneurial intentions. Kautonen, van Gelderen and Fink (2015) showed the robustness of the TPB using longitudinal data. Similarly, with a meta-analytical study, Schlägel and König (2014) confirmed the empirical fit of the TPB vis-à-vis other models of entrepreneurial intent using findings from 98 studies. Building upon the insights of the TPB, Fishbein and Ajzen (2011) developed a more integrated intention formation model with the actual behavior feeding back into the variables determining intention formation. Considering the fact that we use only the pre-behavioral part of the TPB, as well as observe its great usage and validation within the entrepreneurship literature, we have decided to use the TPB (Ajzen, 1991; Vuorio et al., 2018).

In the TPB, the intention to perform a behavior derives from both the desirability of doing so and the perception of successfully being able to perform the behavior. More specifically, intention is determined by the attitude towards the behavior, subjective norms, and perceived behavioral control. The former two describe the desirability of performing a certain behavior while the latter represents perceptions of the behavior's feasibility. All three variables are based on an individual's belief in the benefits that will be derived from a given behavior (Ajzen, 1991). In the context of sustainable entrepreneurship, such benefits can both be self-enhancing (i.e., personal benefits) as well as self-transcending (i.e., benefits for other individuals, the environment or future generations) (Vuorio et al., 2018). The variables are explained in more detail below.

First, attitude towards the behavior describes the desirability of the behavior from an individual's perspective. It therefore describes the personally perceived attractiveness of the target behavior, in this case, becoming a sustainable entrepreneur (Autio et al., 2001). Attitude towards the behavior results from behavioral beliefs, which describe the perceived probability of the positive or negative outcomes of the behavior (Ajzen, 1991). Again, in the case of sustainable entrepreneurship, these positive outcomes are understood as both self-enhancing as well as self-transcending (Vuorio et al., 2018). Hence, while two individuals can have the same beliefs about simultaneously creating self-transcending and self-enhancing value by starting a sustainable enterprise, it may be desirable to one but not to the other. In other words, beliefs about the inherent complexities and possible tensions of simultaneously creating economic and non-economic gains might reduce the desirability of some individuals to start a sustainable enterprise (Muñoz, 2018).

Second, subjective norms concern how close peers (such as friends, family or mentors) approve of a particular behavior. Subjective norms result from normative beliefs, which reflect the willingness to comply with the opinion of one's close peers (Ajzen, 1991). They therefore describe how inhibiting or enabling the social environment is for one's intention to become a sustainable entrepreneur (Vuorio et al., 2018).

Third, feasibility is conceptualized using perceived behavioral control. It can be compared to self-efficacy (Bandura, 1986) and reflects the extent to which the individual believes he or she is able to perform a particular behavior (Ajzen, 1991). Perceived behavioral control results from control beliefs, which describe a combination of trust in one's personal skills and potential facilitators and barriers.

All variables originate from individual background factors, which are strictly independent variables, and their influence on intentions to become a sustainable entrepreneur is mediated by the other variables in the model (Ajzen, 1991; Fishbein and Ajzen, 2010). We argue that both self-transcending and self-enhancing values and considering the future consequences of an individual's behavior can be identified as individual background variables

because they are (i) trait-specific to an individual and (ii) relatively stable over time (Schwartz, 1992; Toepoel, 2010). This reasoning will be further elaborated below.

2.2. Intention formation in sustainable entrepreneurship

Sustainable entrepreneurs aim to create sustainable development through commercial entrepreneurial activities (Schaltegger and Wagner, 2011). Therefore, they act both pro-social and pro-environmental as their goal is to generate two types of value – self-enhancing (economic) and self-transcending (social and environmental) (Dean and McMullen, 2007; Shepherd and Patzelt, 2011). While the former is typically created within an organization, the latter is captured on a societal level (Santos, 2012). Altruism, i.e. ‘individual motivation to improve the welfare of another person’ (Penner et al., 2005, p. 368), has therefore been identified as one of the main drivers of the desire to start a sustainable enterprise (Patzelt and Shepherd, 2011). A substantial body of literature indicates that individuals might be behaving altruistically because of (sub-) conscious self-interest (Fehr and Fischbacher, 2003; Patzelt and Shepherd, 2011). Through their altruistic behavior they might expect reciprocation, to build a beneficial reputation or reduce personal distress related to the others situation (De Waal, 2008; Trivers, 1971; Underwood and Moore, 1982). However, research within social entrepreneurship has shown that individuals rather draw on empathy-based altruism, i.e. ‘help and care born from empathy with another’ (De Waal, 2008, p. 281) when benefiting others through their commercial activities (Bacq and Alt, 2018). This indicates that their main altruistic motivation is to help others in need rather than satisfy their own interests (Santos, 2012). Such an altruistic motivation to found a social enterprise requires both perspective-taking and empathetic concern in order to adequately relate to the beneficiaries situation (Bacq and Alt, 2018; Davis, 2015). Because sustainable entrepreneurs also act pro-environmental, we can additionally expect a form of biospheric altruism, which is a concern for the welfare of not only other individuals, but also emphatic concern for other organisms and species within nature (Patzelt and Shepherd, 2011). However, such biospheric altruism has not yet been empirically discussed in the sustainable nor social entrepreneurship literature to describe the intent formation (Muñoz, 2018; Shepherd and Patzelt, 2011).

What we do know from existing literature is that the desire to act pro-environmental and pro-social is shaped by prioritizing personal values (Fischer and Schwartz, 2011; Steg et al., 2014). Schwartz (1992, p.21) defines a value as ‘a desirable transsituational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity’. Values transcend situations and represent a consistent and efficient means of explaining differences in attitudes and behaviors related to sustainable development (Rokeach, 1973). For sustainable entrepreneurs, values can therefore serve as an internal compass when making decisions in situations of juxtaposed options and increased complexity due their goal plurality (Muñoz, 2018). Previous research indeed confirms that including values and general sustainability orientation increases the explanatory power of models on intention formation within sustainable entrepreneurship because they determine an individuals’ attitude towards sustainable entrepreneurship (Voorio et al., 2018).

In this regard, environmental psychology literature argues that in particular self-transcendent (i.e., biospheric and altruistic) and self-enhancement values (egoistic and hedonic) determine attitudes towards sustainable behavior (Steg et al., 2014; Stern, 2000). Self-transcendent values are positively related to altruistic and pro-environmental behavior as more universal or benevolent individuals perceive the good in others or in their surroundings

(Schwartz, 1992). Biospheric values ‘reflect a concern with the quality of nature and the environment for its own sake, without a clear link to the welfare of other human beings’ (Steg et al., 2014, p.4). Altruistic values ‘reflect a concern with the welfare of other human beings’ (Steg et al., 2014, p.4). Both values are self-transcendent and describe how individuals take into account collective interests when making individual decisions (Steg et al., 2014). Both values are also positively related to pro-social and pro-environmental preferences, beliefs, attitudes and behavior (De Groot and Steg, 2008). Therefore, individuals with strong biospheric and altruistic values may find it both more desirable and necessary to navigate the various complexities that can arise when sustainability and economic profitability are combined because, through their values, they believe sustainability to be a desirable goal (Shepherd and Patzelt, 2011). At the same time, they might also be better able to do so due to their greater cognitive ability to use perspective thinking and feel empathic concern (Bacq and Alt, 2018). Furthermore, the prospect of working as a sustainable entrepreneur can provide an individual with a sense of meaningfulness and empowerment if it reflects that individual’s own personal values (Singh and Singh, 2019). We therefore expect individuals with strong biospheric and strong altruistic values to develop more favorable attitudes towards sustainable entrepreneurship.¹ Research has reported stronger effects of biospheric values than altruistic values on sustainable behavior (Steg et al., 2014). However, the role of values such as altruism and related ethical decision making reported in the social entrepreneurship research leads us to expect a positive relationship between altruism and attitudes towards sustainable entrepreneurship (Mair and Marti, 2006). Therefore, we formulate the following hypotheses:

H1a. Strong biospheric values have a positive influence on favorable attitudes towards sustainable entrepreneurship.

H1b. Strong altruistic values have a positive influence on favorable attitudes towards sustainable entrepreneurship.

In contrast to biospheric and altruistic values, self-enhancement values describe the tendency to prioritize personal over societal or public gains when making decisions (Steg et al., 2014). Egoistic values describe the consideration of ‘costs and benefits of choices that influence the resources people have, such as wealth, power, and achievement’ (Steg et al., 2014, p.4). Egoism may not lead to unsustainable behavior per se. For example, an individual might install solar panels when he or she perceives it to be cost beneficial. Hence, as mentioned above, individuals could rationalize sustainable entrepreneurial activities as being positive for their own benefit (Keim, 1978). At the same time, a certain amount of egoism is required to obtain a balance among the three types of value (Shepherd and Patzelt, 2011). Nonetheless, previous research has found a negative relationship between egoistic values and sustainable behavior (De Groot and Steg, 2008). Furthermore, Voorio et al. (2018) show that extrinsic, typically more materialistic rewards have a negative influence on attitudes towards sustainable entrepreneurship. In other words, overemphasizing self-enhancing rewards will consequently lead to a disequilibrium in the triple bottom line. Hence, we argue that although sustainable

¹ Previous research on intention formation within sustainable entrepreneurship has found a strong relationship among values, attitudes and, ultimately, intentions whereas feasibility was found to be less important (Voorio et al., 2018). Combined with the awareness of the ecological and social environments, values and attitudes are considered to be the most important acknowledged drivers of starting a new (sustainable) enterprise (Kuckertz and Wagner, 2010; Shepherd and Patzelt, 2011; Muñoz, 2018). Bearing in mind parsimoniousness, we therefore exclusively focused on the relationship between values and attitudes.

entrepreneurs must show a certain degree of egoism to create value for themselves, strong egoism could lead to a consideration of personal gains and a negative effect on attitudes for sustainable entrepreneurship.

Lastly, hedonic values describe the predisposition of individuals who are '*mainly focused on improving one's feelings and reducing effort*' (Steg et al., 2014, p.5). As mentioned above, the prospect of working as a sustainable entrepreneur can provide a sense of meaningfulness and empowerment to the individual if it reflects their own personal values (Singh and Singh, 2019). While this could provide a certain degree of satisfaction, individuals may still be reluctant to start a sustainable enterprise due to the potential extra effort required related to becoming a sustainable entrepreneur. Examples include the stricter regulations and related increased effort required to meet sustainability standards such as ISO certification or to the need to engage in significant political activism to overcome market barriers (Pinkse and Groot, 2015). We therefore propose the following hypotheses:

H1c. Strong egoistic values have a negative influence on favorable attitudes towards sustainable entrepreneurship

H1d. Strong hedonic values have a negative influence on favorable attitudes towards sustainable entrepreneurship

The impact of a sustainable firm in terms of social and environmental value, as defined by Shepherd and Patzelt (2011), might materialize only in future generations (Arnocky et al., 2014). Hence, sustainable entrepreneurs must be aware of the consequences of their entrepreneurial actions to preserve the environment and society for future generations and thus must take longer-term perspectives (Shepherd and Patzelt, 2011). We apply the concept of consideration of future consequences (CFC) to conceptualize and measure this future orientation in the inter-generational nexus. CFC is defined as '*the extent to which individuals consider the potential outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes*' (Strathman et al., 1994, p.743). Previous research has shown that CFC can be divided into two time perspectives, which are applied in this study: consideration for future consequences (CFC-F) and consideration of immediate consequences (CFC-I). If individuals are very considerate of the future consequences of their behavior, they will be better able to buffer the perks of short-term pleasures (buffering hypothesis). If, conversely, they are more concerned with the immediate consequences of their behavior, they will be less future-oriented because they are more susceptible to the perks of immediate benefits (susceptibility hypothesis; Joireman and King, 2016).

Like any sustainable behavior, starting a sustainable enterprise likely entails short-term costs and long-term benefits (Arnocky et al., 2014). Individuals with the intention to start a sustainable enterprise must therefore be cognitively able to consider the future consequences of their work while simultaneously dealing with immediate costs (Muñoz, 2018). We therefore argue that individuals who are high in consideration of future consequences (CFC-F) will be favorable in their attitudes towards sustainable entrepreneurship because they are more willing to address the needs of future generations at the expense of their own contemporaneous benefits. This could be related to the fact that more future-oriented individuals are better equipped to buffer the perks of short-term benefits and accordingly make more conscientious decisions about the future (Strathman et al., 1994). Hence, we expect high CFC-F individuals to develop more favorable attitudes towards sustainable entrepreneurship than individuals high in CFC-I, which leads to the following hypotheses:

H2a. High CFC-F has a positive influence on favorable attitudes

towards sustainable entrepreneurship.

H2b. High CFC-I has a negative influence on favorable attitudes towards sustainable entrepreneurship.

Our final set of hypotheses relates the key variables of the theory of planned behavior – attitudes, norms and behavioral control – to an individual's intention to start a sustainable enterprise. In the TPB, attitudes reflect the desirability of a particular behavior to the individual. Positive attitudes towards becoming a sustainable entrepreneur have shown a strong influence on intentions to actually become a sustainable entrepreneur (Vuorio et al., 2018). Indeed, individuals are more likely to act on their values if they have a more positive attitude towards sustainable behavior (Wagner, 2012). At the same time, employees are more likely to implement business models related to sustainability if they have stronger pro-environmental attitudes (Jabbour et al., 2019). We therefore expect that when individuals have positive attitudes towards sustainable entrepreneurship, they are more likely to develop intentions to start a sustainable enterprise.

H3. A positive attitude towards sustainable entrepreneurship has a positive influence on the intention to start a sustainable enterprise.

Subjective norms represent the influence of the social environment on individual behavior. Interestingly, subjective norms are the construct with the weakest effect on conventional entrepreneurial intentions (Liñan and Chen, 2009). However, in terms of the implementation of sustainable technologies such as cleaner production standards, perceived social pressure to implement such standards plays a key role (Zhang et al., 2013). Furthermore, Muñoz and Dimov (2005) show that perceived support from the social environment can be a path to sustainability-oriented entrepreneurial activity. We therefore expect that when individuals experience strong subjective norms towards sustainable entrepreneurship, they will be more likely to develop intentions to start a sustainable enterprise.

H4. A strong subjective norm of the social environment towards sustainable entrepreneurship has a positive influence on the intention to start a sustainable enterprise.

Perceived behavioral control is the personal perception of being able or competent enough to perform a behavior (Ajzen, 1991). The conventional entrepreneurship literature has established a strong link between perceived behavioral control and entrepreneurial intentions (Krueger et al., 2000; Liñan and Chen, 2009). Furthermore, individuals with high perceived behavioral control are better able to set goals and have more positive conceptions about them reaching pre-set tasks in establishing a sustainable business (Vuorio et al., 2018). Accordingly, perceived control and competency have been found to be crucial factors of implementing sustainability practices in a business context (Singh et al., 2019a; Cabral and Jabbour, 2019). This is very important as societal problems related to sustainable development are often understood as being difficult to solve; some scholars have referred to them as 'wicked problems' (Dentoni and Blitzer, 2015; Seelos and Mair, 2005). We therefore expect that when individuals experience high perceived behavioral control towards sustainable entrepreneurship, they are more likely to develop intentions to start a sustainable enterprise.

H5. High perceived behavioral control of becoming a sustainable entrepreneur has a positive influence on the intention to start a sustainable enterprise.

Fig. 1 presents the research model of this study.

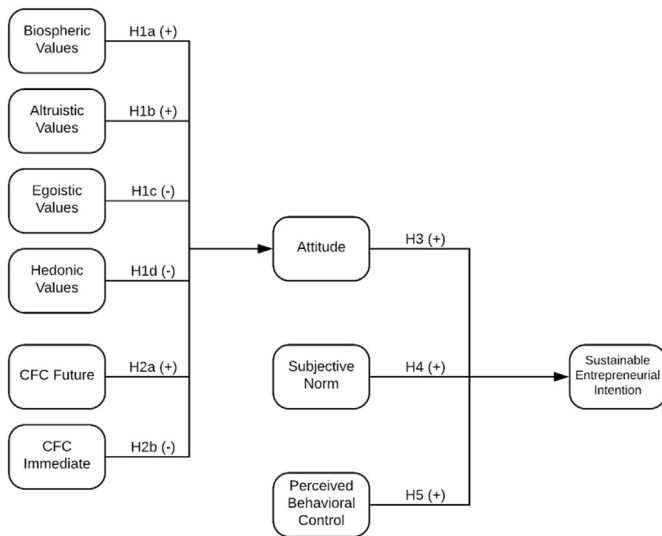


Fig. 1. Research model.

3. Data and method

3.1. Research design

For this study, the primary data were collected via a survey. We employed a sample from a student population because intentional processes are very sensitive to initial conditions (Kim and Hunter, 1993). Accordingly, it is necessary not only to measure sustainable entrepreneurial intention before actual behavior occurred but also to include individuals without intentions to start a (sustainable) enterprise (Krueger et al., 2000). Additionally, research has shown that higher education increases the likelihood of more entrepreneurial activity, which is why we sampled from university students in their last year of their degree program and therefore close to the decision of making their occupational choice (Dickson et al., 2008).

We followed a four-step approach of conducting theory-testing surveys (Forza, 2002). First, the literature was reviewed to identify established measures and items. Second, we used expert interviews to ensure the face validity of the questionnaire items. Third, a first pilot with 36 participants was used to test the reliability and the consistency of the questionnaire items. Fourth, a second pilot with 69 participants was used to re-test the validity and reliability of the overall survey and the individual items following a few minor changes in wording and item sequencing that derived from the first pilot testing.

3.2. Participants

The final survey was distributed among students in twelve different graduate and final-year undergraduate courses of four research universities and universities of applied science; three of which were in the Netherlands and one of which was in Germany. We selected students from the fields of science, engineering, entrepreneurship and business administration because starting new firms often consist of heterogeneous, multi-disciplinary entrepreneurial teams (Henneke and Lüthje, 2007). In total, 338 students completed the questionnaire. We merged this sample with the sample derived from the second pilot study because the survey and data collection processes were similar. This resulted in a final dataset of 407 students, which was used to test our model.

The average age of the students was 23.89 years ($\sigma = 2.74$). Of

the students, 60% were male, 24% followed a sustainable-entrepreneurship-related course in their study program, and 10% had founded their own company. Approximately 24% of the students had an intention to start a sustainable firm in the future (which was somewhat higher than reported in the 2016 Global Entrepreneurship Monitor). The students were relatively hedonic ($\mu = 5.38$) and scored relatively low on egoistic values ($\mu = 3.78$). The mean values for self-transcending values and future orientation were somewhat above scale average with mean values of 4.69, 5.05 and 4.72 for biospheric, altruistic and consideration of future consequences, respectively. Full information maximum likelihood was performed to impute missing data incidentally found for single survey items. Confirmatory factor analysis (CFA) was used to investigate whether all survey items loaded on a 'common method' factor and to assess whether the data may have featured significant common variance. The CFA analysis yielded a poor model fit to the data, with $\chi^2(119) = 5040.47$, RMSEA = 0.12, CFI = 0.43 and NFI = 0.40, indicating that common method bias was unlikely to be a problem in the data. Exploratory factor analysis was used to test the convergent validity of the concepts.² All constructs are unidimensional.

3.3. Measures

3.3.1. Consideration of future consequences

To measure consideration of future consequences, Strathman et al.'s (1994) set of items was used, which enabled us to differentiate between immediate and future consequences (Joireman and King, 2016). All items were measured on seven-point Likert scales ranging from 1 = 'Extremely uncharacteristic' to 7 = 'Extremely characteristic'. To measure concern with future consequences (CFC-F), we used Strathman et al.'s (1994) items 01, 02, 06–08 such as 'I consider how things might be in the future, and try to influence those things with my day-to-day behavior' ($\alpha = 0.82$). To measure concern for immediate consequences (CFC-I), we used Strathman et al.'s (1994) items 03–05 and 09–11 such as 'I only act to satisfy immediate concerns, figuring the future will take care of itself' ($\alpha = 0.65$). Although the Cronbach's alpha is somewhat below the threshold value, the indications for unidimensionality (1 factor extracted with significant loadings > 4) and convergent and divergent validity of the construct were good. Therefore, this measure was adopted in the analysis. All negatively formulated items of CFC-I were reversed prior to their use in the empirical analysis (Joireman and King, 2016).

3.3.2. Values

The survey employed the 16-item value measure proposed by Steg et al. (2014). All items were measured on nine-point Likert scales ranging from -1 = 'Against my principles', to 0 = 'Not important' and 7 = 'Extremely important'. Biospheric values were measured with four items addressing 'unity with nature', 'prevention of pollution', 'respecting the earth' and 'protecting the environment' ($\alpha = 0.91$). Altruistic values were measured with four items addressing 'equality', 'social justice', 'world at peace' and 'helpfulness' ($\alpha = 0.71$). Egoistic values were measured with five items addressing 'social power', 'wealth', 'ambition', 'authority' and 'influence' ($\alpha = 0.74$). Hedonic values were measured with three items addressing 'enjoying life', 'pleasure' and 'gratification' ($\alpha = 0.67$). Although the Cronbach's alpha for hedonic values is somewhat below the threshold value, the indications for unidimensionality (1 factor extracted with significant loadings > 4) and convergent and divergent validity of the construct were good.

² For an overview of all items for each concept, see Appendix A.

Therefore, this measure was adopted in the analysis.

3.3.3. Attitude towards behavior³

We used an adapted version of Liñán and Chen's (2009) five-item measure including items such as 'Being a sustainable entrepreneur implies more advantages than disadvantages to me' and 'Being a sustainable entrepreneur would entail great satisfaction for me' to measure attitude towards sustainable entrepreneurship ($\alpha = 0.92$). The participants responded to these items on a seven-point Likert scale ranging from 1 = 'Total disagreement' to 7 = 'Total agreement'.

3.3.4. Behavioral beliefs⁴

Behavioral beliefs was measured using a shortened and adapted version of Moriano et al.'s (2012) measure. The items were adapted to include the wording of sustainable entrepreneurship. The participants were asked to rate the extent to which they believe they would be able to do certain things if they were to become a sustainable entrepreneur. (e.g., 'being creative' or 'being my own boss'). Four sustainable entrepreneurial specific items were included ('Helping the poor and disadvantaged', 'Contributing to sustainable development', 'Helping to protect the environment' and 'helping future generations'; $\alpha = 0.66$). The participants responded to these items on a seven-point Likert scale ranging from 1 = 'Very unlikely' to 7 = 'Very likely'. Although the Cronbach's alpha is somewhat below the threshold value, the indications for unidimensionality (1 factor extracted with significant loadings > 4) and convergent and divergent validity of the construct were good. Therefore, this measure was adopted in the analysis.

3.3.5. Subjective norm

The participants were asked to rate the extent to which they believed their friends, family or fellow students would approve of their becoming sustainable entrepreneurs (Moriano et al., 2012). The participants responded to this three-item measure on a seven-point Likert scale ranging from 1 = 'Total disapproval' to 7 = 'Total approval' ($\alpha = 0.79$).

3.3.6. Normative beliefs

Normative beliefs was measured by asking the students the extent to which they cared about what their family, friends and fellow students would think about them (Moriano et al., 2012). The participants responded to the three-item measure on a seven-point Likert scale ranging from 1 = 'Not at all' to 7 = 'Very much' ($\alpha = 0.71$).

3.3.7. Perceived behavioral control

To measure perceived behavioral control, we used Kolvereid's (1996) three-item measure adapted to sustainable entrepreneurship (with items such as 'If I wanted to, I could easily pursue a career as a sustainable entrepreneur') complemented by two items from Liñán and Chen (2009), also adapted to sustainable entrepreneurship (with items such as 'I can control the creation process of a new sustainable firm'). The students responded to these items

on a seven-point Likert scale range from 1 = 'Total disagreement' to 7 = 'Total agreement' ($\alpha = 0.83$).

3.3.8. Control beliefs

To measure control beliefs, we used Moriano et al.'s (2012) five-item entrepreneurial self-efficacy measure. The participants responded on a seven-point Likert scale (ranging from 1 'extremely unlikely' to 7 = 'extremely likely') on items that measure whether they believe they are able to perform certain tasks related to starting a sustainable business such as writing a business plan or attracting financing ($\alpha = 0.84$).

3.3.9. Intention measure

To measure intentions, we used Autio et al.'s (2001) one-item measure ('I intend to start a firm that solves a sustainability problem in the next five years') extended by two items ('I am determined to create a sustainable firm in the future' and 'My professional goal is to become a sustainable entrepreneur' derived from Liñán and Chen (2009)). All three items were re-formulated to fit the sustainable entrepreneurship context of the paper. The participants rated their intention to start a sustainable enterprise on a 7-point Likert (ranging from 1 'extremely inaccurate' to 7 = 'extremely accurate'; $\alpha = 0.89$).

3.3.10. Control variables

We included two dummy control variables to account for alternative explanations of the relationships predicted in our model. That is, we control for the participant's previous company founding experience and whether or not the participant has followed sustainable entrepreneurship education. Both measured exposure to entrepreneurship, which may cause a stronger intention to found a new enterprise due to higher awareness and self-efficacy (Liñán, 2004; Zapkau et al., 2015).

4. Results

The descriptive statistics and pairwise correlation statistics for the variables are shown in Table 1. To analyze our data, we used a two-stage structural equation estimation method as recommended by Anderson and Gerbing (1988). A summary of the standardized structural equation modeling results is presented in Table 2 and Fig. 2. A discussion of the main findings and the model fit is presented below. We used AMOS graphics 7.0 for the analysis (Byrne, 2016).

Table 2 and Fig. 2 present the results of the structural equation modeling including standardized regression weights. Hypotheses 1a, 1b and 1c related to the roles of biospheric, altruistic and egoistic values in determining attitudes. Fig. 2 shows that the path coefficients from biospheric values ($\beta = 0.27$, $p < 0.01$) and from altruistic values ($\beta = 0.09$, $p < 0.05$) to attitudes towards sustainable entrepreneurship were positive and significant. Hypotheses 1a and 1b were therefore supported. The path coefficient from egoistic values to attitudes was positive but not significant ($\beta = 0.00$, ns). Therefore, we did not find statistical support for hypothesis 1c. Interestingly, the results show that the path coefficient from hedonic values to attitudes was positive and significant ($\beta = 0.08$, $p < 0.10$). This effect was contrary to our hypothesized relationship and gave therefore no support to hypothesis 1d. This could partially be explained if the 'pleasure and promise' aspect of entrepreneurial passion that is discussed in the conventional entrepreneurship literature also holds true for sustainable entrepreneurship (Cardon et al., 2009, p.515; Shepherd and Patzelt, 2011). We will elaborate on this in the discussion section.

The second set of results related to the role of consideration of future consequences in determining attitudes. The path coefficient

³ Note that in the theory of planned behavior, behavioral, norm and control beliefs are used for scaling purposes only. Therefore, attitudes, subjective norms and perceived behavioral control are multiplied with their respective belief measure and divided by ten prior to using the measure in the empirical analysis (e.g., $Attitude \times Behavioral\ beliefs / 10$; Moriano et al., 2012)

⁴ After the factor analysis, it became apparent that despite pre-testing and using existing, validated items, not all ten items of behavioral beliefs load significantly on a single factor. Consequently, we retained a shortened construct with the four items presented here

Table 1
Descriptive statistics and correlation matrix.

	Mean	Sd.	1	2	3	4	5	6	7	8	9	10	11	12
1. Biospheric values	4.69	1.52	1.00											
2. Altruistic values	5.05	1.17	0.60**	1.00										
3. Egoistic values	3.78	1.11	0.07	0.08	1.00									
4. Hedonistic values	5.38	1.03	0.27***	0.25***	0.43***	1.00								
5. CFC-Future	4.72	0.80	0.36***	0.28***	0.16***	0.15***	1.00							
6. CFC-Immediate	3.16	0.90	-0.22***	-0.13***	0.25***	0.14***	-0.20***	1.00						
7. Attitude	2.44	1.00	0.58***	0.43***	0.10**	0.26***	0.36***	-0.12**	1.00					
8. Subjective norm	2.65	0.89	0.17***	0.22***	0.12**	0.20***	0.09*	0.07	0.25***	1.00				
9. Perceived behavioral control	3.41	1.01	0.20***	0.14***	0.21***	0.18***	0.16***	0.05	0.43***	0.15***	1.00			
10. Intention	0.21	0.41	0.41***	0.27***	0.19***	0.18***	0.22***	-0.05	0.70***	0.17***	0.51***	1.00		
11. Sustainable entrepreneurship education ^a	0.24	0.43	0.05	0.04	-0.04	-0.06	0.00	-0.14***	0.11**	0.00	0.07	0.18***	1.00	
12. Founding experience ^a	0.10	0.31	0.07	0.02	0.06	0.10*	0.03	0.02	0.17***	-0.04	0.24***	0.24***	0.02	1.00

N = 407.

*p < 0.10, **p < 0.05, ***p < 0.01.

^a Dummy variable.

Table 2
Summary study results.

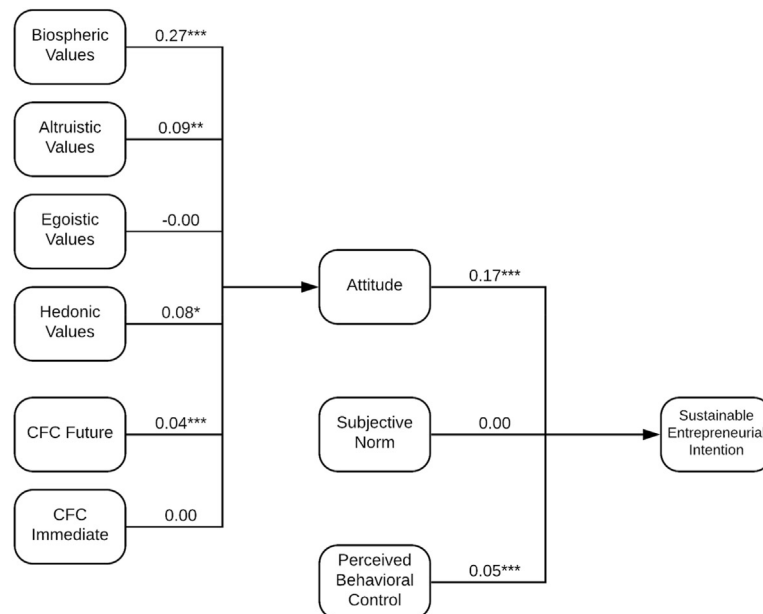
		Attitude	Intention
Control Variables	Sustainable entrepren. education ^a		0.10**
	Founding experience ^a		0.20***
Independent variables	Biospheric	0.27***	
	Altruistic	0.09**	
	Egoistic	-0.00	
	Hedonistic	0.08*	
	CFC-Future	0.04***	
	CFC-Immediate	0.00	
	Attitude		0.17***
	Subjective Norm		0.00
	Perceived Control		0.05***

* p < 0.10, ** p < 0.05, *** p < 0.01.

^a Dummy variable.

from CFC-F to attitude towards sustainable entrepreneurship was positive and significant ($\beta = 0.04$, $p < 0.01$), thereby supporting hypothesis 2a. Consideration of immediate consequences did not seem to be important in relation to attitudes towards sustainable entrepreneurship; the path coefficient was positive but not significant ($\beta = 0.00$, ns).

The third set of results related to the role of attitudes, norms and perceived behavioral control in determining intentions to start a new sustainable enterprise. Fig. 2 shows that the path coefficients for attitudes ($\beta = 0.17$, $p < 0.01$) and perceived behavioral control ($\beta = 0.05$, $p < 0.01$) towards the intention to become a sustainable entrepreneur were both positive and significant. Hypotheses 3 and 5 were therefore supported by the data. Interestingly, the perceived support of the social network seemed less important. The path



^a path coefficients are standardized

^b control variables are included

* p < 0.10, ** p < 0.05, *** p < 0.01

Fig. 2. Summary of study results ^{a,b}.

coefficient from subjective norm to intentions was virtually zero and insignificant ($\beta = 0.00$, ns). Hypothesis 4 was therefore not supported. This aligned with the previous findings reported in the literature for conventional entrepreneurship (Krueger et al., 2000).

The results for the control variables were in line with expectations. The results showed that previous founding experience was a strong predictor of intentions to become a sustainable entrepreneur. The path coefficient was both positive and significant ($\beta = 0.20$, $p < 0.01$). Additionally, sustainable entrepreneurship education positively related to intentions as the path coefficient was both positive and significant ($\beta = 0.10$; $p < 0.05$).

Despite the significant findings and the support for many of the hypotheses, the data did not fit the model well. The values for CFI (0.83), IFI (0.83), NFI (0.81) and RMSEA (0.12) were all under their threshold values. We therefore went back to the literature to explore possible alternative model specifications.

4.1. Alternative model specification

Research has shown that motivation, attitudes and efficacy are all important for recognizing environmental opportunities (Hostager et al., 1998). Furthermore, theory suggests that attitudes towards sustainable behavior can serve as a direct determinant of whether or not an individual ascribes to themselves the ability to perform sustainable behavior (Stern, 2000). Furthermore, previous research does indeed argue that the linear relationship between desirability, feasibility and intention as stated within the TPB might be more complex in the case of sustainable entrepreneurship (Vuorio et al., 2018). However, such a direct relationship between attitudes and behavioral control was not formally hypothesized initially because it is not specified in the TPB (Ajzen, 1991). Including a direct relationship between attitudes and perceived behavioral control in the research model improved the model fit with the values for CFI (0.92), IFI (0.92), NFI (0.90) and RMSEA (0.08), all of which now meet their threshold values. A summary of the standardized structural equation modeling results is presented in Fig. 3. Similar results regarding the hypotheses were found in terms of signs, path coefficients and significance. The only difference was the increased significance level of the influence of hedonic values on attitudes ($\beta = 0.08$, $p < 0.05$). Fig. 3 shows that attitudes indeed strongly significantly and positively predicted perceived behavioral control in terms of being a sustainable entrepreneur. The path coefficient was both positive as well as significant ($\beta = 0.45$, $p < 0.01$).

5. Discussion

Our study offers four theoretical contributions. First, previous studies argued that would-be sustainable entrepreneurs need a sustainability orientation that helps them to navigate the complexities that arise when simultaneously meeting the triple bottom line of social, environmental and economic value creation and taking into account future generations (Muñoz, 2018). We conceptualized and quantified these complexities using value systems and consideration of future consequences. We complemented previous studies that focused on work values as determinants of sustainable entrepreneurial intentions (Vuorio et al., 2018). Most importantly, the previous altruism measures did not discriminate between altruism towards other individuals (social altruism) or towards the environment (biospheric altruism). Our study showed the importance of both altruistic and biospheric values and their influence on the attitude towards sustainable entrepreneurship. This indicates that altruism, or the motivation to improve the

welfare of another person, is not sufficient by itself to explain sustainable entrepreneurial intent, but should be distinguished with concern for the environment (Paztelt and Shepherd, 2011). We invite future research to unravel whether similar cognitive mechanisms as perspective-taking or empathic concern (Bacq and Alt, 2018; Davis, 2015) help in developing pro-environmental attitudes and consequently sustainable entrepreneurial intentions. We further showed that egoistic values play an insignificant role in this regard. This could show that individuals do not act out of enlightened self-interest (Keim, 1978) but are primarily driven by the altruistic value creation of sustainable entrepreneurship with the personal gain and business side being secondary means to an end (Santos, 2012; Schaltegger and Wagner, 2011). However, we only asked for general sustainable entrepreneurial intent. We could therefore not discriminate between the opportunities the participants find desirable to develop. Hence, it is possible that individuals aim to pursue opportunities where sustainable and economic goals are perfectly synergistic and individuals aim to behave altruistically to benefit themselves (i.e. intentionally selfish altruism; de Waal, 2008). We invite future research to look at the value-intention-opportunity link in relation to altruism more closely. Our results also showed that hedonic values have a positive influence on the attitude towards sustainable entrepreneurship rather than the hypothesized negative effect. This could indicate that while sustainable entrepreneurial behavior might bear costs that potentially reduce personal economic gain, individuals might still derive pleasure and satisfaction from the idea of becoming a sustainable entrepreneur (Cardon et al., 2009; Steg et al., 2014).

Second, we contributed to the debate on the relative importance of different individual- and social-level factors in the decision-making process of becoming a sustainable entrepreneur. Some scholars highlight the importance of social drivers such as perceived support and approval within the personal network (e.g., Koe et al., 2014; Muñoz and Dimov, 2015). Our results highlighted the importance of individual-level factors – both in terms of desirability and feasibility in the case of intention formation. While we did find strong support for attitudes and perceived behavioral control, subjective norms seemed to be less relevant. This finding seems to indicate that the intention to start a sustainable enterprise does not depend on perceived approval within the social network (Koe et al., 2014) but is rather more actor-centered (Ernst, 2011). This finding fits with the description of sustainable entrepreneurs as individuals who ‘challenge the status quo’ (Seelos and Mair, 2005:243). In other words, sustainable entrepreneurs potentially break with the conventional mode of doing business and change common conventions about the (perceived) role of enterprises in society. This could explain why it is not necessary for individuals to have the (perceived) approval of close peers (such as friends or family) for the decision to become a sustainable entrepreneur. This seems to be contrary to actual sustainable entrepreneurial behavior whereby resources and other support provided from the social network do play a crucial role (Muñoz and Dimov, 2015). We therefore invite future research to focus on this link between intention and behavior.

Third, we contributed to the sustainable entrepreneurship education literature as well as the wider literature on cleaner production and the transition towards a circular economy. The relatively low percentages of sustainable enterprises could indicate that individuals are subject to lower sustainable entrepreneurial exposure than the exposure involved in conventional entrepreneurship (Global Entrepreneurship Monitor, 2016). This finding is troublesome considering that sustainable entrepreneurs are typically seen as important drivers for sustainable innovations

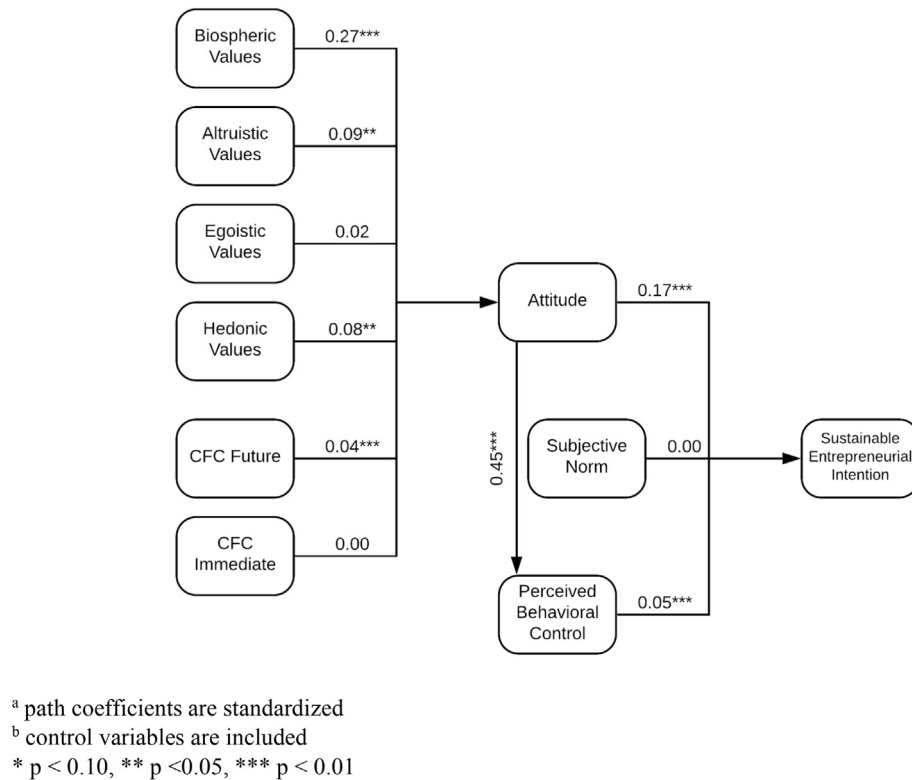


Fig. 3. Summary of study results with alternative model specification ^{a,b}.

contributing to the transition to a more circular economy (Eikelenboom and de Jong, 2019; Singh et al., 2020; Veleva and Bodkin, 2018). In the last years, the focus of the literature has brought the human side of the circular economy more to the forefront (Jabbour et al., 2019) and emphasized human resources practices (Cabral and Jabbour, 2019; Singh et al., 2020) or environmental training on the job (Singh et al., 2019b). Our results confirm this view and suggest that this process should ideally begin before the occupational choice is made. We showed that participating in a specific sustainable entrepreneurship course is positively related to sustainable entrepreneurial intentions. Our results therefore corroborate earlier research, which has called for the inclusion of sustainable entrepreneurship-specific curricula (Kuckertz and Wagner, 2010). Furthermore, Lans et al. (2014) showed that integrating specific entrepreneurial (e.g., opportunity recognition or entrepreneurial self-efficacy) and sustainability-related competences (e.g., systems or foresighted thinking) can be beneficial for tracking student's sustainable entrepreneurial development process. In this regard, it would be potentially relevant for future research to analyze whether and how sustainable entrepreneurship-specific startup competences such as systems thinking or foresight thinking could be taught through sustainable entrepreneurship-specific curricula and might influence intentions (Ploum et al., 2018). Another avenue for future research could be to determine whether sustainable entrepreneurship education could partly compensate for a lack of exposure to sustainable entrepreneurship, which we can expect due to the current low numbers of starting and established sustainable entrepreneurs (Global Entrepreneurship Monitor, 2016). Individuals who are subject to entrepreneurial exposure have a higher likelihood of starting a firm because of higher awareness and self-efficacy and more positive

attitudes towards self-employment as well as friends and family serving as role models (Liñán, 2004; Krueger, 2003; Zapkau et al., 2015).

Fourth, this study contributed to the sustainable entrepreneurship literature by being the first to analyze the role of consideration of future consequences in startup intentions and thereby differentiating between immediate and future considerations. We found that consideration of future consequences has a positive influence on attitudes towards sustainable entrepreneurship. Considering the insights from the cognitive psychology literature, we can therefore expect that individuals with positive attitudes towards sustainable entrepreneurship perceive it easier to buffer incentives and perks to behave in a short-termed, unsustainable way (Joireman and King, 2016). We invite future research to test this relationship in a more experimental setting.

5.1. Practical implications

Our study has implications for the content of entrepreneurship, sustainability and engineering courses within higher education institutions (Lans et al., 2014). Values are typically seen as relatively stable (Schwartz, 1992), which may offer few opportunities for pivoting, for example, in the case of non-biospheric individuals. There are, however, ways to activate latent values to make them more salient. This can help to increase the propensity of individuals to act on these latent values. In this regard, Schwartz (1992) argues that values can become infused with affect. This leads to individuals becoming aroused once a core value is threatened. For example, individuals who are high in biospheric values who are confronted with environmental degradation in the Amazon rainforest are more likely to have an increased propensity to act on this value because it

is threatened (Patzelt and Shepherd, 2011). The same value activation strategies could also be used within environmental training practices to stimulate intentions to become sustainably active within larger corporations. This could be beneficial as such practices have been shown to increase environmental performance and ultimately strengthen competitive advantage (Singh et al., 2019b). Our study further revealed that fostering individuals' long-term future orientation could be a promising path in promoting positive attitudes towards sustainable entrepreneurship and, in addition to the question of values, should be incorporated in the behavioral research on sustainable entrepreneurship (Shepherd and Patzelt, 2011). One way to achieve this would be to include these elements in the early stages of the sustainable entrepreneurial educational process, for example, within undergraduate courses. Once the decision to become a sustainable entrepreneur has been made, more practical and technical knowledge becomes increasingly relevant and could be the focus of graduate courses (Lans et al., 2014). We therefore recommend the above-introduced value activation strategy that can help to more specifically target individuals within classrooms.

Lastly, changing individuals' attitudes towards sustainable behavior has long been seen as being under the jurisdiction of governments (Owens and Drifill, 2008). Within our study, we found that subjective norms had no direct influence on the decision to become a sustainable entrepreneur. However, it might be that subjective norms have limited influence because the awareness and knowledge of sustainable entrepreneurship is still relatively limited due to low sustainable entrepreneurial exposure, as discussed above. The role of governments could therefore be to raise awareness and to promote the legitimacy of sustainable entrepreneurship. When the general public becomes more informed about sustainable entrepreneurship, they may also exercise an influence in terms of motivating others to become sustainable entrepreneurs. This might increase social norms and could be another avenue for the promotion of sustainable entrepreneurship. It is thus recommended that, as a matter of policy, additional awareness be raised and the legitimacy of sustainable entrepreneurship be promoted within the public through governmental programs.

5.2. Limitations and future research

We would like to mention three limitations that offer opportunities for future research. A first well-known limitation of entrepreneurial intention research is the missing link between intentions and actual behavior (Krueger et al., 2000). Just because an individual has the intention to engage in a certain behavior, it does not mean he or she will act on this intention with certainty. Our study offered important points of departure for future research on intentions and actual behavior including opportunities for longitudinal studies that enable the analysis of changes in intentions over time and the consequences thereof for behavior.

Second, the measures used were constrained by the information that could be obtained from the survey. Driven by previous research, this study relied on established measures that were sometimes adapted to our specific research context. A replication of our study with new data would enable a cross-validation and the use of alternative measures. For example, we measure sustainable entrepreneurial education with a binary variable. Future research could include the content of sustainable entrepreneurship teaching programs and in doing so analyze the educational content that benefits intention formation (Ploum et al., 2018). The use of mixed-method and especially longitudinal case studies following the insights reported here would be an opportunity in this direction.

A third limitation concerns the sample adopted in this research including its geographical setting. The survey data were collected from students who participated in university programs in the Netherlands and in Germany. Future research could include other countries, cultures and programs enabling the testing of the generalizability of our findings.

A fourth and last limitation concerns the individual-level boundaries of this paper. Future research could study other dimensions of the sustainable intention formation process such as, for example, the influence of entrepreneurial ecosystems or social networks. These entities could have important inhibiting or enabling influence on the starting entrepreneur (Koe et al., 2014). Therefore, we believe it would be valuable for other researchers' to repeat our work in more culturally diverse settings. The same holds true for educational background. While we focused on graduate students from universities, it might be fruitful to include other higher education institutions or even high school students.

6. Conclusion

This paper set out to empirically fill the gap with regard to the complexities within the intention formation process in sustainable entrepreneurship resulting from pursuing a triple bottom line of social, environmental and economic goals. These complexities arise because of the potentially conflicting nature of the goals and might be a barrier to individuals' starting sustainable enterprises. The contribution of this study is that it showed that by distinguishing between self-transcending and self-enhancing values, it is possible to explain variation in attitudes towards becoming a sustainable entrepreneur. It therefore helps explain on which values individuals draw when they are willing to resolve the conflicts of self-interest and altruism inherent in sustainable entrepreneurial activity. By employing value activation strategies, these insights could be incorporated into educational programs to supplement the sustainable entrepreneurial skills and capabilities being taught. We hope that our findings have opened up interesting research avenues and will help practitioners to promote the option of becoming sustainable entrepreneurs as they represent one of the driving forces in our transition towards a more circular economy that emphasizes innovation on cleaner technologies.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Hendrik N. Thelken: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing, Visualization, Project administration. **Gjalt de Jong:** Conceptualization, Methodology, Writing - review & editing, Supervision.

Appendix A. Overview survey items

Values. The following questions concern your values. Behind each value there is a short explanation concerning the meaning of the value. Please indicate how important the following 16 values are as guiding principles in your life. The scale ranges from -1 (value is opposite to your guiding principles in life) to 7 (value is of utmost importance as a guiding principle).

Variables	Items
Altruism	1. <i>Equality</i> : equal opportunity for all 2. <i>Social justice</i> : correcting injustice, caring for the weak 3. <i>A world at peace</i> : free of war and conflict 4. <i>Helpful</i> : working for the welfare of others
Egoism	1. <i>Wealth</i> : material possessions, money 2. <i>Influential</i> : having an impact on people and events 3. <i>Authority</i> : the right to lead and command 4. <i>Ambitious</i> : hardworking, aspiring 5. <i>Social power</i> : control over others, dominance
Biospheric	1. <i>Respecting the earth</i> : harmony with other species 2. <i>Unity with nature</i> : fitting into nature 3. <i>Preventing pollution</i> : protecting natural resources 4. <i>Protecting the environment</i> : preserving nature
Hedonism	1. <i>Pleasure</i> : gratification of desires 2. <i>Enjoying life</i> : enjoying food, sex, leisure etc. 3. <i>Gratification for oneself</i> : satisfaction, self-fulfillment

Subjective norm. If you decided to start a sustainable firm, would people in your close environment approve or disapprove of that decision? Please indicate from 1 (total disapproval) to 7 (total approval). **Norm beliefs.** Generally speaking, how much do you care what people in your close environment think about your decisions. Please indicate from 1 (not at all) to 7 (very much).

Variables	Items
Subjective norm	1. Your close family 2. Your friends 3. Your fellow students
Norm beliefs	1. Your close family 2. Your friends 3. Your fellow students

Consideration of Future Consequences. For each of the statements below, please indicate whether or not the statement is characteristic of you from 1 (extremely uncharacteristic) to 7 (extremely characteristic).

Attitudes. Please indicate to what extent you agree with the following statements from 1 (total disagreement) to 7 (total agreement). **Behavioral beliefs.** Please indicate to what extent you believe you are able to do the following things if you would start a

Variables	Items
CFC-F	1. I consider how things might be in the future, and try to influence those things with my day to day behavior. 2. Often, I engage in a particular behavior in order to achieve outcomes that may not result for many years. 3. I am willing to sacrifice my immediate happiness or well-being in order to achieve certain future outcomes. 4. I think it is important to take warnings about negative outcomes seriously even if these negative outcomes will not occur for many years 5. I think it is more important to perform a behavior with important distant consequences than a behavior with less important immediate consequences.
CFC-I	1. I only act to satisfy immediate concerns, figuring the future will take care of itself. 2. My behavior is only influenced by the immediate (e.g. a matter of days or weeks) outcomes of my actions. 3. My convenience is a big factor in the decisions I make or the actions I take 4. I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level. 5. I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time. 6. I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a late date. 7. Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.

sustainable enterprise from 1 (extremely unlikely) to 7 (extremely likely).

Variables	Items
Attitudes	1. Being a sustainable entrepreneur implies more advantages than disadvantages to me 2. A career as a sustainable entrepreneur is attractive for me 3. If I had the opportunity and resources, I'd like to start a sustainable firm 4. Being a sustainable entrepreneur would give me great satisfaction 5. Among various options, I would rather be a sustainable entrepreneur
Behavioral beliefs	1. Helping the poor and disadvantaged. 2. Contributing to sustainable development. 3. Helping to protect the environment. 4. Helping future generations.

Perceived behavioral control. Please indicate your level of agreement with the following statements from 1 (total disagreement) to 7 (total agreement). **Control beliefs.** If you were to create your own sustainable business, to what degree would you be able to complete the following tasks? Please indicate from 1 (extremely unlikely) to 7 (extremely likely).

Variables	Items
Perceived behavioral control	1. Starting my own firm and becoming a sustainable entrepreneur would be very easy for me 2. If I wanted to, I could easily pursue a career as a sustainable entrepreneur 3. I can control the creation process of a new sustainable firm 4. If I tried to start a sustainable firm, I would have a high probability of succeeding 5. I have the necessary knowledge to start a sustainable enterprise
Control beliefs	1. Define your business idea and strategy for your company 2. Write your business plan (do market research, financial analysis, etc.) 3. Negotiate and maintain supportive relationships with potential investors and banks 4. To recognize market opportunities for the development of new products and/or services 5. To relate to key people to obtain the capital needed for your business

Intention. The following question addresses your intention to start a SUSTAINABLE firm. Please indicate how accurate the following statements are to you from 1 (extremely inaccurate) to 7 (Extremely accurate).

Variables	Items
Intention	1. I intend to start a firm that solves a sustainability problem in the next five years 2. I am determined to create a sustainable firm in the future 3. My professional goal is to become a sustainable entrepreneur

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